SONY

MULTI RESOLUTION FILM SCANNER

FVS-1000-series

OPERATION MANUAL English

1st Edition (Revised 1)

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

AVERTISSEMENT

Afin d'éviter tout risque d'incendie ou d'électrocution, ne pas exposer cet appareil à la pluie ou à l'humidité.

Afin d'écarter tout risque d'électrocution, garder le coffret fermé. Ne confier l'entretien de l'appareil qu'à un personnel qualifié.

VORSICHT

Um Feuergefahr und die Gefahr eines elektrischen Schlages zu vermeiden, darf das Gerät weder Regen noch Feuchtigkeit ausgesetzt werden.

Um einen elektrischen Schlag zu vermeiden, darf das Gehäuse nicht geöffnet werden. Überlassen Sie Wartungsarbeiten stets nur qualifiziertem Fachpersonal.

WARNING
When installing the unit, incorporate a readily accessible disconnect device in the fixed wiring.
If a fault should occur during operation of the unit, operate the disconnect device to switch the power supply off.

WARNUNG
Beim Einbau des Geräts ist daher im Festkabel ein leicht zugänglicher Unterbrecher einzufügen.
Wenn während des Betriebs eine Funktionsstörung auftritt, ist der Unterbrecher zu betätigen, damit die Stromversorgung zum Gerät unterbrochen wird.

AVERTISSEMENT
Quand vous installez l'appareil, mettez en place un dispositif de mise hors circuit facilement accessible dans le câblage.
En cas de défaut pendant le fonctionnement de l'appareil, utilisez le dispositif de mise hors circuit pour couper l'alimentation.

CAUTION
Installation has to be done by Sony authorized technician.

PRECAUTIONS
L'installation doit être effectuée par un technicien agrée Sony.

ACHTUNG
Die Installation darf nur von autorisiertem Sony Fachpersonal ausgeführt werden.

For the customers in the USA

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

Table of Contents

Overview **2**
Locations and Functions of Parts **3**
Front Panel 3
Rear Panel 4
Film Mount Table 5
Control Panel 6
Connector Panel 10
Film Loading **15**
Operations **16**
Playback 16
Stopping the System Temporarily 18
Controlling the Unit With an External Device 18
Menu Operations **19**
Basic Operations 19
Mode Operations 20
Checking an Input Signal 21
Loading and Storing Data 21
Menu Items 22
Specifications **28**

Overview

The FVS-1000 Multi Resolution Film Scanner has the following features.

Features

Multi-resolution output

The FVS-1000 can handle a maximum of four independent video signal processing channels at a time, two SDTV and two HDTV channels. One SDTV video processing channel is provided as standard, and the second SDTV and HDTV channels are optional.

Primary color correction

Area array CCD technology allows the FVS-1000 to integrate a powerful primary color correction system comprising digital light control, logarithmic signal processing, and linear signal processing.

Stable film transport

The FVS-1000 features the S.O.P.S. (Sony Optical Picture Stabilizer). S.O.P.S. is an optoelectronic image-stabilizer system that offers pin-registered image quality by fine control of the light path.

Frame-based image capturing

The FVS-1000 applies the same principle as a professional motion film camera to ensure the highest image quality. Each frame is exposed with the film stationary, and its position is registered in the film gate.

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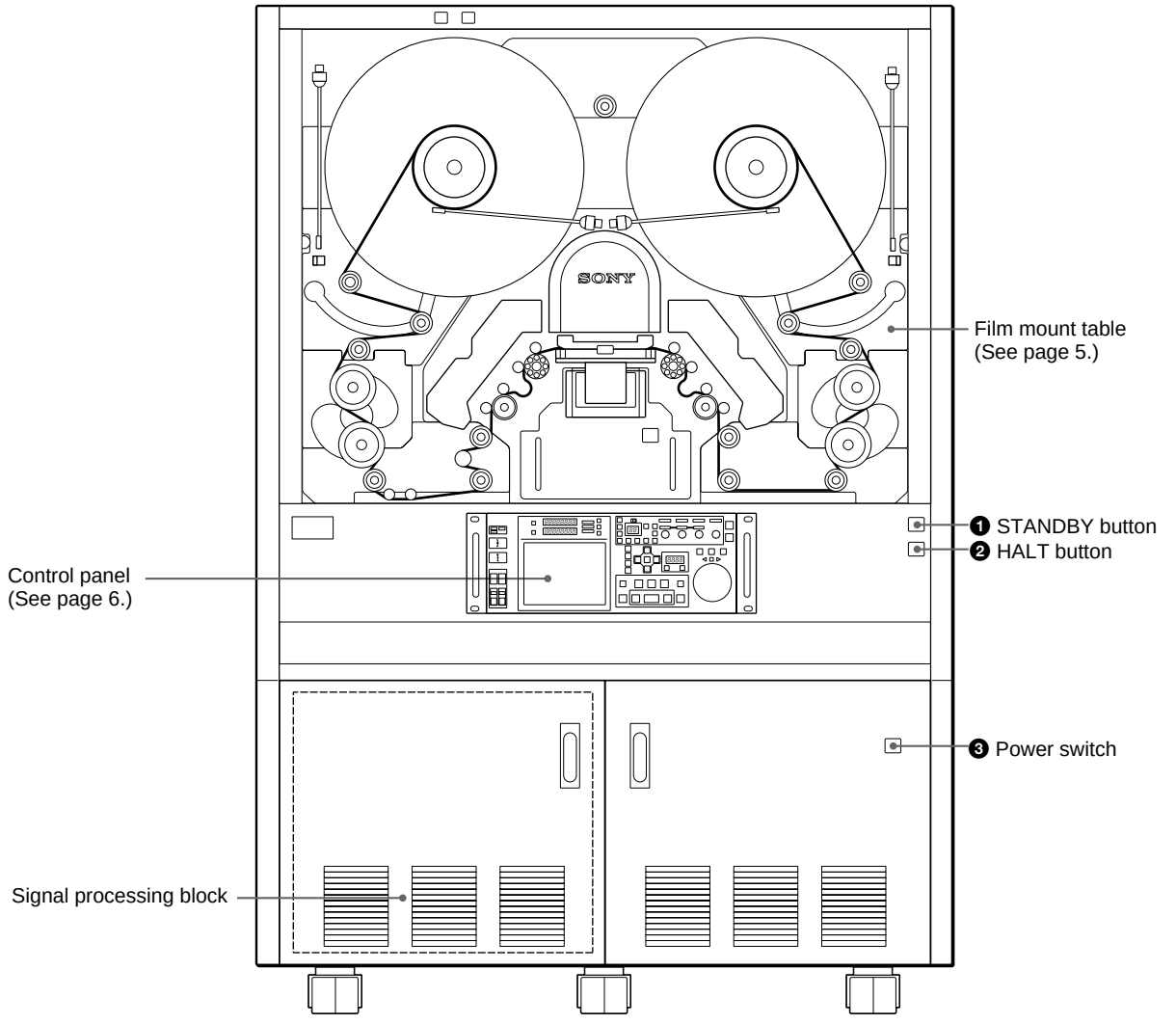
Locations and Functions of Parts

Front Panel



❶ STANDBY button
Press to set the unit to standby mode.

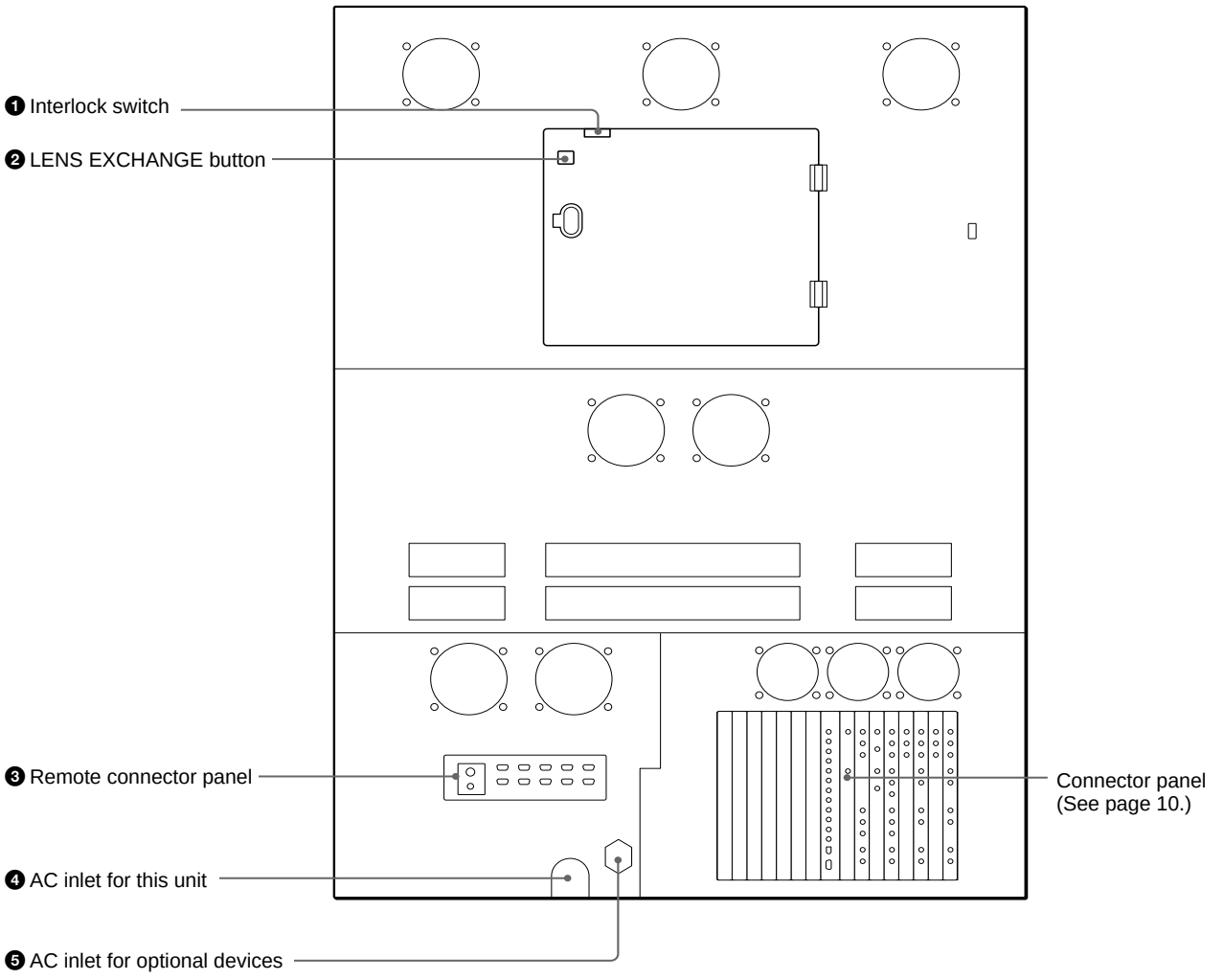
❷ HALT button
Press to stop operation in an emergency.

❸ Power switch
Set to **I** to supply power to the FVS-1000.

Notes

- If a front or rear door is open, an interlock switch will be set to OFF, and power is not supplied to the film transport block even if the power switch is set to **I**.
- These switches do not turn ON or OFF the power to the optional devices installed in the unit. To control the power supply to the installed devices, install a breaker or switch for the devices.

Rear Panel


❶ Interlock switch
❷ LENS EXCHANGE button
❸ Remote connector panel
❹ AC inlet for this unit
❺ AC inlet for optional devices
Connector panel
(See page 10.)

❶ Interlock switch
Detects whether the rear door is open or closed. If you open the door, power supply to the system is disabled.

❷ LENS EXCHANGE button
Press to set the camera block backward to facilitate lens exchange.

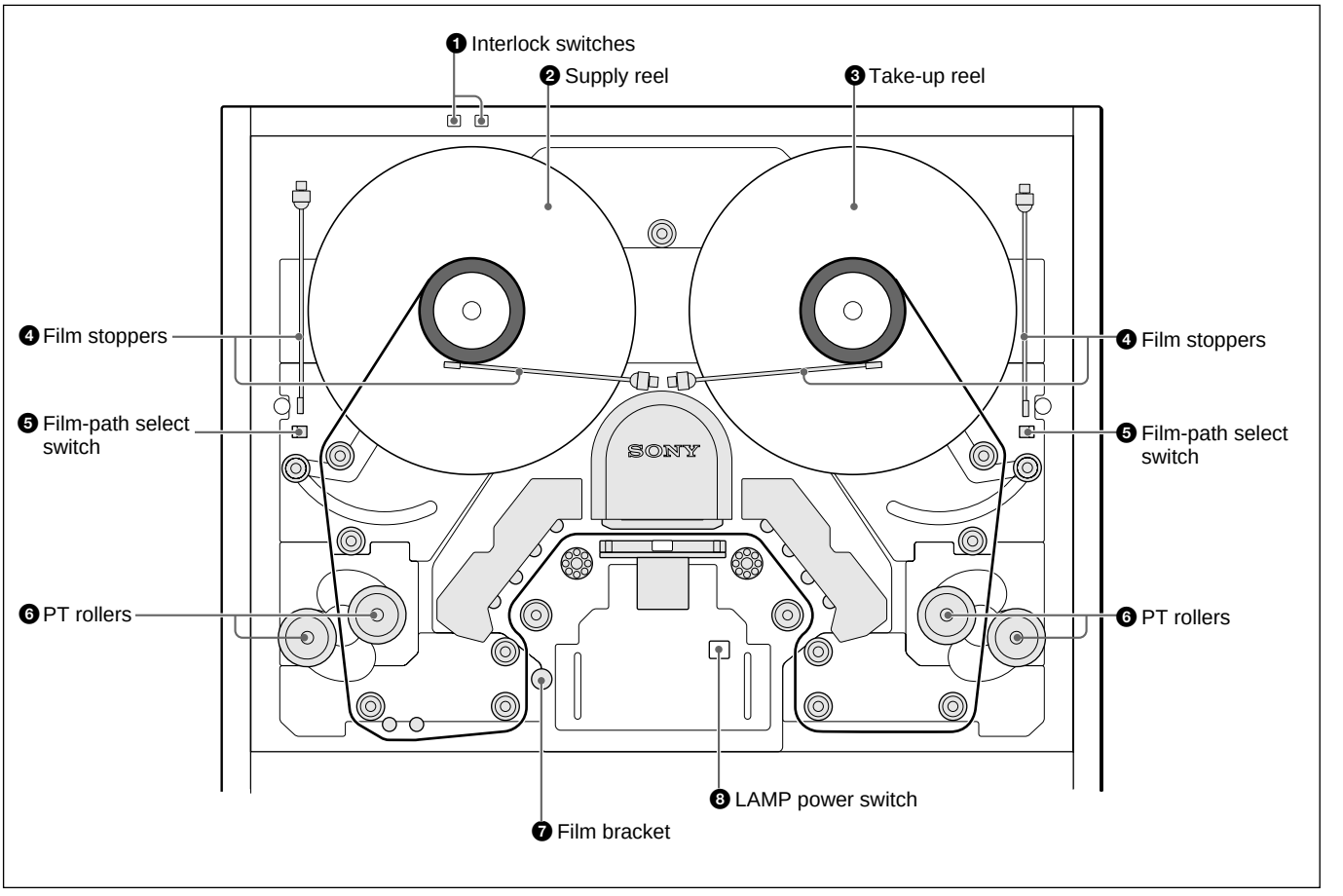
❸ Remote connector panel
When you control the unit using an external device, use these connectors.

❹ AC inlet for this unit
Accepts the power supplied to this unit.

❺ AC inlet for optional devices
Accepts the power supplied to the optional devices installed in this unit.

Note
The power switch on the front panel does not control the power input to this connector. Install a breaker or switch for this inlet.

Film Mount Table



❶ Interlock switches
Detect whether the front doors are open or closed. If you open a door, power supply to the system is disabled.

❷ Supply reel
Mount the film.

❸ Take-up reel
Attach a reel for winding the film.

❹ Film stoppers
Turn these rods over the film to avoid loosening of the roll.

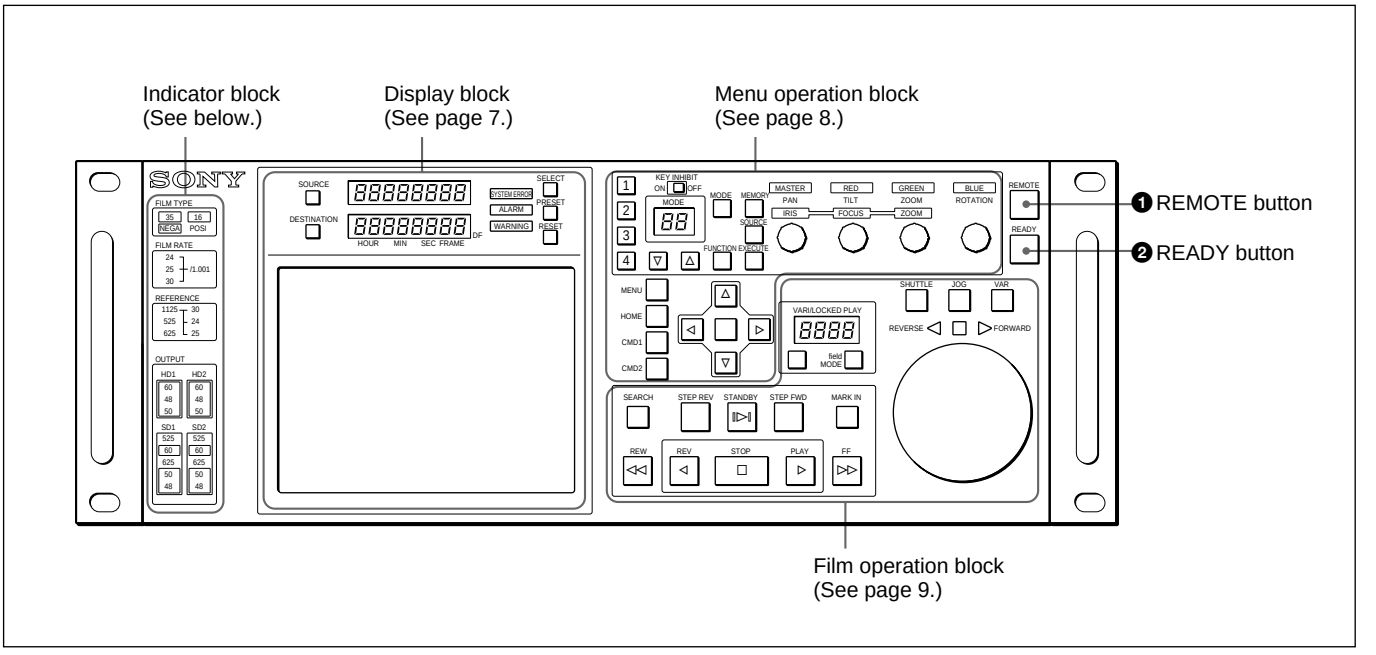
❺ Film-path select switches
Set the switches according to the film path.

❻ PT rollers
Remove dust from the film when it runs between them. These rollers must be cleaned periodically.
For details on cleaning, see Maintenance Manual Part 1.

❼ Film bracket
Pull up for 16-mm film, and push down for 35-mm film.

❽ LAMP power switch
Press to turn the lamp on.

Control Panel



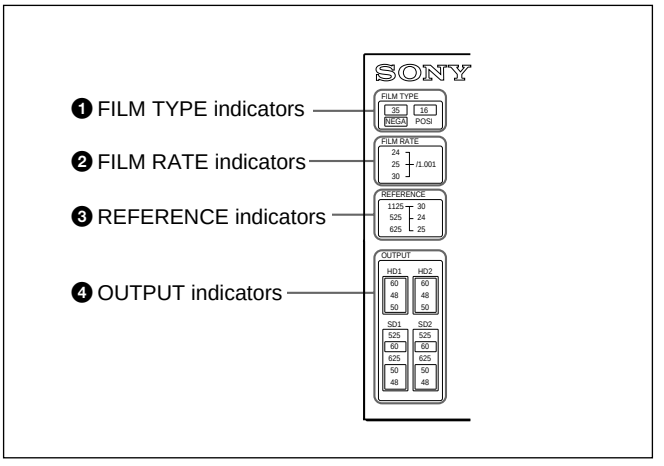
❶ REMOTE button

Press to control the unit using an external device connected to the REMOTE connector on the rear.

❷ READY button

Press to temporarily stop running the film. Playback can be retrieved from the point where it stops.

Indicator block



❶ FILM TYPE indicators

Show the film type setting.
35: for 35-mm film
16: for 16-mm film
NEGA: for negative film
POSI: for positive film

❷ FILM RATE indicators

Show the film rate setting, 23.976, 24, 24.975, 25, 29.97 or 30.

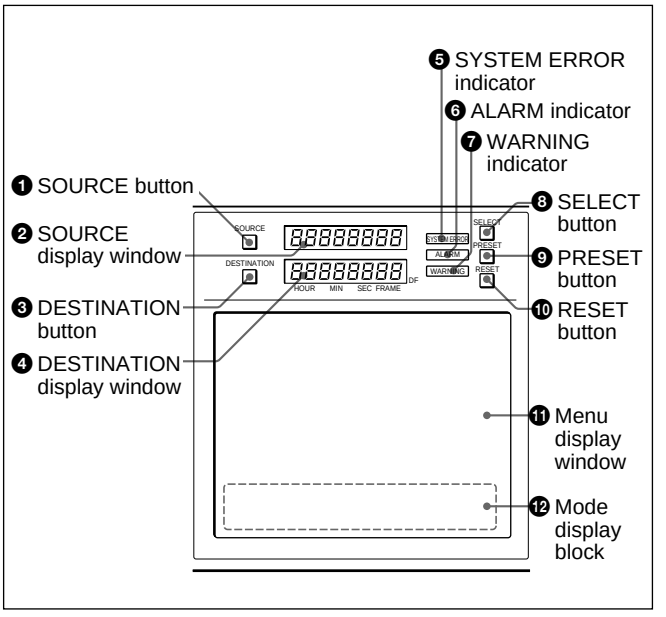
❸ REFERENCE indicators

Show the reference video signal settings.
1125: for HD TV system (30, 24 or 25)
525: for 525 TV system
625: for 625 TV system

❹ OUTPUT indicators

Shows the selection of the output signal.
HD1: for a 60 Hz, 48 Hz or 50 Hz HD1 signal
HD2: for a 60 Hz, 48 Hz or 50 Hz HD2 signal
SD1: for an SD1 signal of the 525 TV system (60 Hz) or 625 TV system (50 or 48 Hz)
SD2: for an SD2 signal of the 525 TV system (60 Hz) or 625 TV system (50 or 48 Hz)

Display block



❶ SOURCE button [1)]
Selects the data displayed in the SOURCE display window.

❷ SOURCE display window
Shows the film position.

❸ DESTINATION button [1)]
Selects the data displayed in the DESTINATION display window.

❹ DESTINATION display window
Shows the timecode of the video signal. The displayed data are selected with the DESTINATION button. During menu operation, the set values are displayed.

❺ SYSTEM ERROR indicator
Lights when a system error occurs.

❻ ALARM indicator
Lights when a hardware error occurs.

❼ WARNING indicator
Lights when an error occurs.

❽ SELECT button [1)]
While you hold this button pressed, the rightmost digit of each the SOURCE and DESTINATION display windows shows the code that indicates the data displayed in the window.

❾ PRESET button [1)]
Presets the data shown in the SOURCE and DESTINATION display windows.

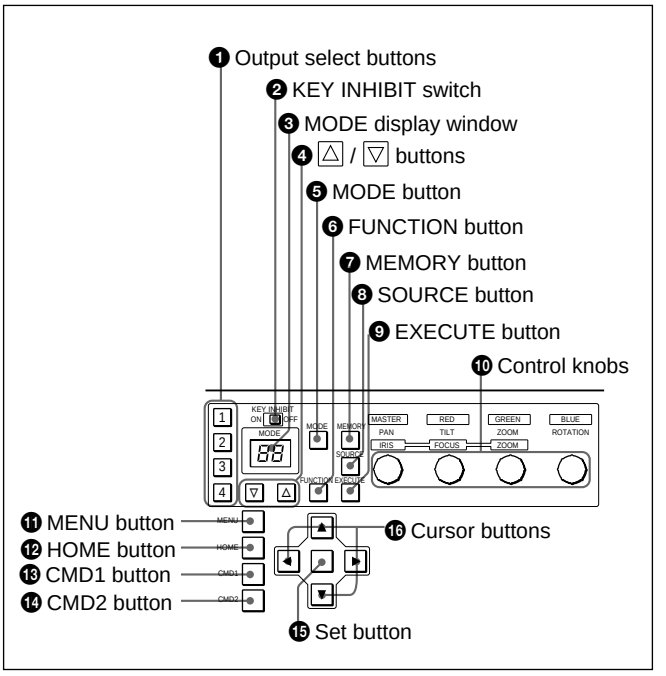
❿ RESET button [1)]
Resets the data shown in the SOURCE and DESTINATION display windows.

⓫ Menu display window
Menus selected with the buttons in the menu operation block appear here.

⓬ Mode display block
Settings of the mode corresponding to the number displayed in the MODE display window appear here.

1) Function available after 2000

Menu operation block



❶ Output select buttons
Select a video output channel during menu operation.

❷ KEY INHIBIT switch
OFF: Activates all the buttons on the control panel.
ON: Deactivates all the buttons on the control panel.

❸ MODE display window
Shows the selected mode number.

❹ △ / ▽ buttons
Selects the mode.

❺ MODE button
Selects the mode or the setting during mode operation. The selected mode number is displayed in the MODE display window.

❻ FUNCTION button
Activates the extended functions of the SOURCE and EXECUTE buttons.

❼ MEMORY button
Activates the memory function.

❽ SOURCE button
Selects the input video signal source.

❾ EXECUTE button
Executes the function selected with the control knobs and MODE button.

❿ Control knobs
Adjusts the picture-quality component selected with the MODE button.

⓫ MENU button
Enters a menu mode.

⓬ HOME button
Returns to the home menu.

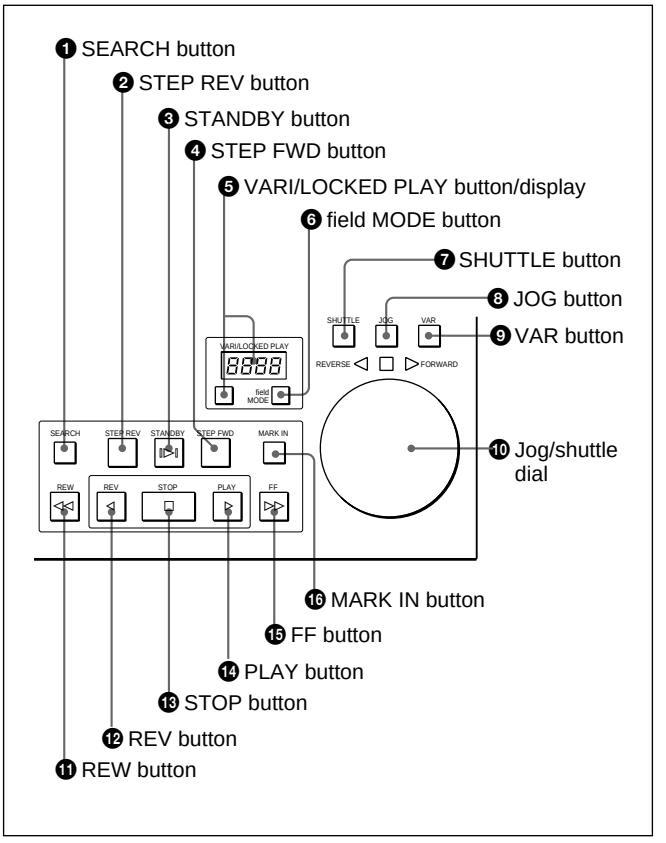
⓭ CMD1 button
Activates command function 1.

⓮ CMD2 button
Activates command function 2.

⓯ Set button
Registers the selections in a menu operation.

⓰ Cursor buttons
Select a menu item and its setting.

Film operation block



❶ SEARCH button
Press to search for a specified position on the film.

❷ STEP REV button
Press to run the film in reverse frame by frame.

❸ STANDBY button
Press to set the unit to standby mode.

❹ STEP FWD button
Press to run the film forward frame by frame.

❺ VARI/LOCKED PLAY button/display
Shows the tape speed of variable playback or locked playback.

❻ field MODE button
Selects the picture mode.
Lit: Interlaced picture
Not lit: Progressive picture

❼ SHUTTLE button
Press to enter shuttle mode. In this mode, the button lights, and playback at ±5 (for 35-mm film) or ±7 (for 16-mm film) times normal playback speed is possible. The playback speed corresponds to the angle of rotation of the jog/shuttle dial.

❽ JOG button
Press to select jog mode. In this mode, the button lights. The playback speed corresponds to the rotational speed of the jog/shuttle dial. In this mode, the dial does not click.

❾ VAR button
Press to select variable-speed playback mode in a maximum range of –2 to +2 times normal playback speed. In this mode, this button lights, and the jog/shuttle dial clicks at the positions for still-picture and ±1 time normal playback speed.

❿ Jog/shuttle dial
Rotate to search for a desired point. Rotate the dial clockwise for forward playback (the ▷ indicator lights up) or counterclockwise for reverse playback (the ◁ indicator lights up). The □ indicator is lit while the unit is in stop mode.
Press the dial to toggle the unit between shuttle, jog, and variable modes.

⓫ REW button
Press to rewind the film.

⓬ REV button
Press to run the film in reverse.

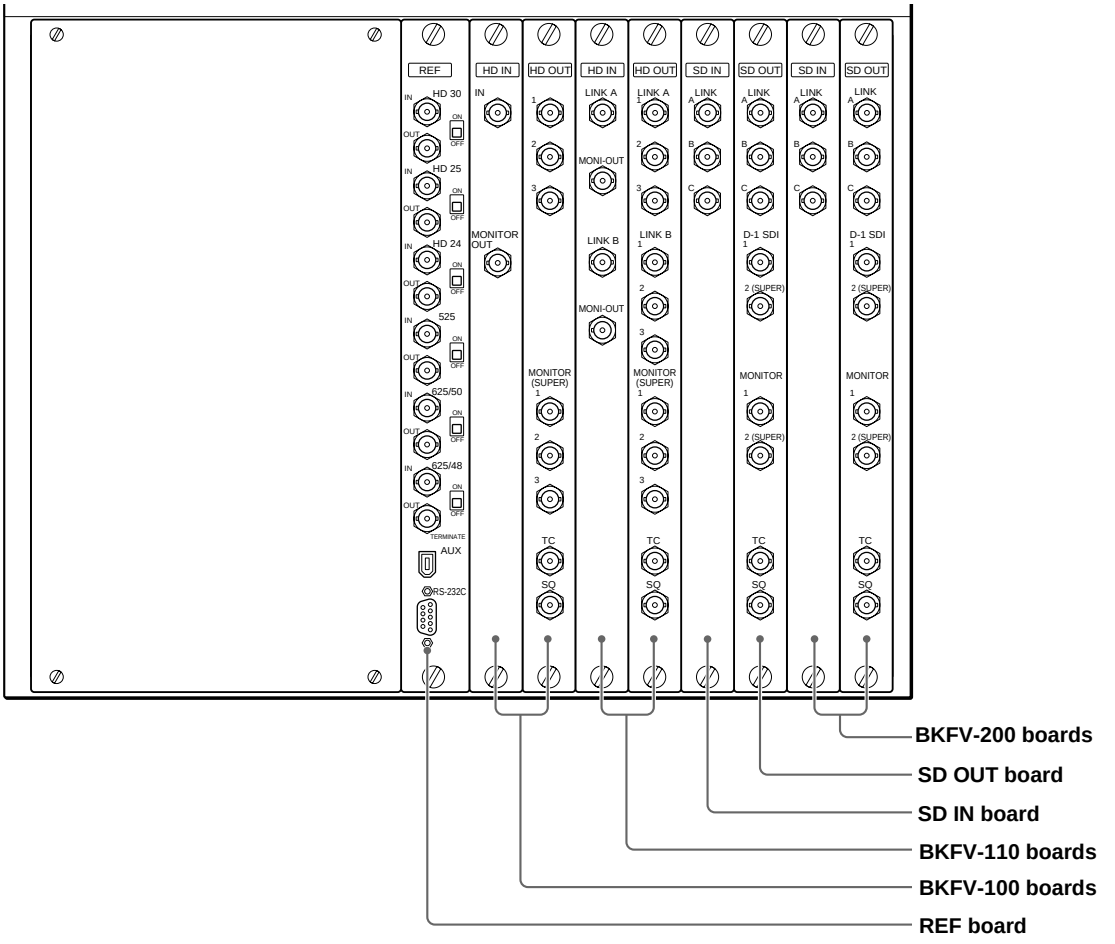
⓭ STOP button
Press to stop running the film.

⓮ PLAY button
Press to start playback of the film.

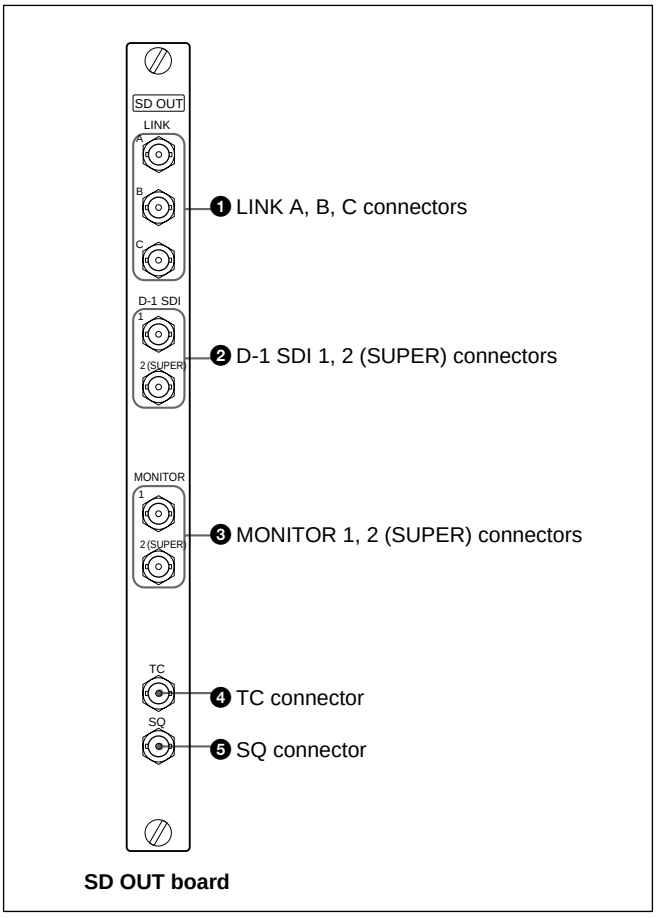
⓯ FF button
Press to run the film forward rapidly.

⓰ MARK IN button
Press to store the film position in memory.

Connector Panel



SD OUT board



SD OUT board

❶ LINK A, B, C connectors (BNC-type)
Supply SD signals selected from the menu.

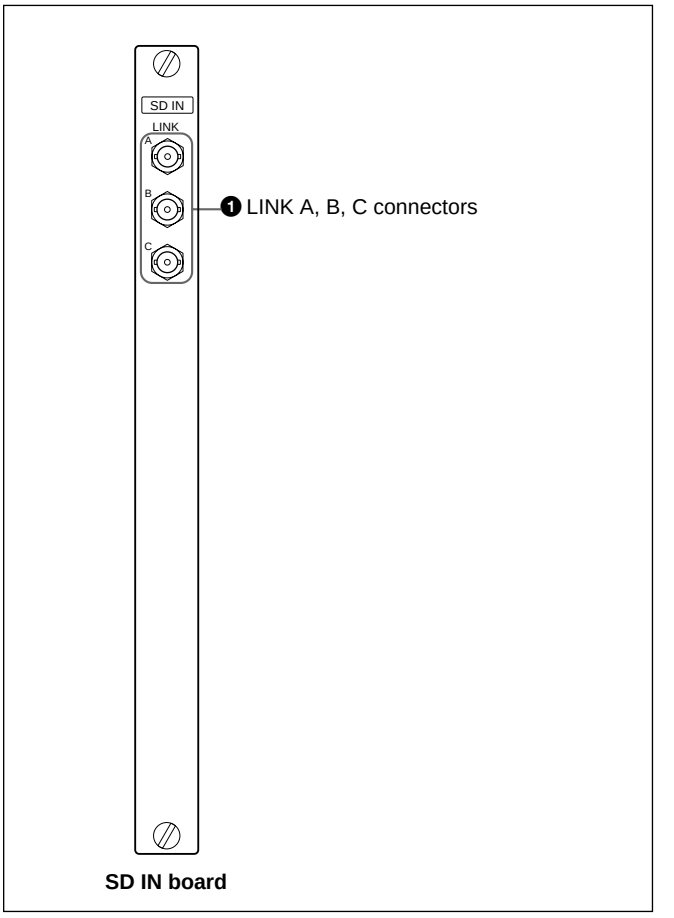
❷ D-1 SDI 1, 2 (SUPER) connectors (BNC-type)
Supply D-1 SDI signals. Connector 2 supplies a signal with a character signal superimposed.

❸ MONITOR 1, 2 (SUPER) connectors (BNC-type)
Supply analog video signals for monitoring.
Connector 2 (SUPER) supplies a signal with a character signal superimposed.
Connect to the input connectors of the video monitors.

❹ TC connector (BNC-type)
Supplies a time code signal

❺ SQ connector (BNC-type)
Supplies a sequential signal.

SD IN board



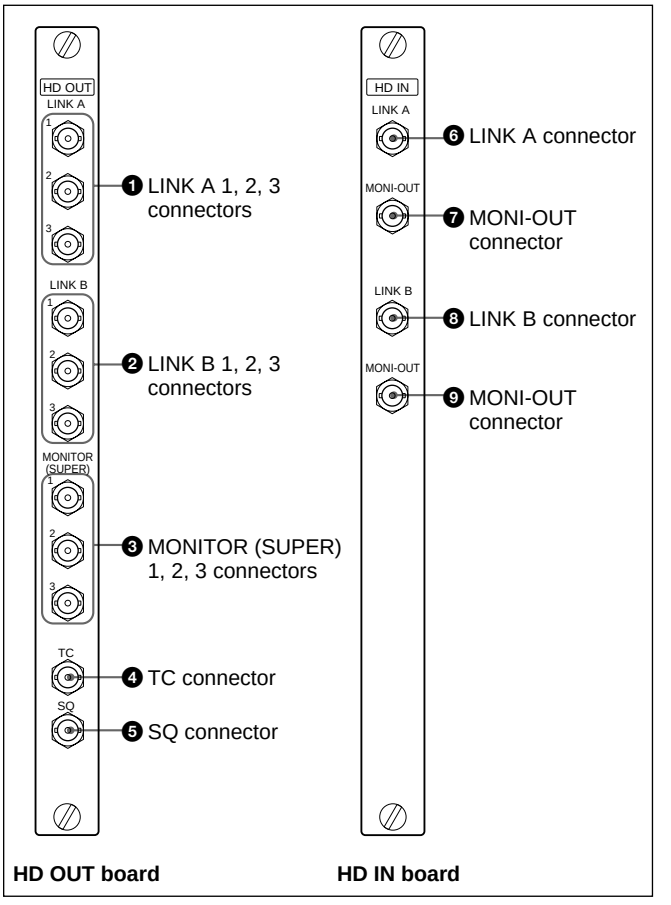
SD IN board

❶ LINK A, B, C connectors (BNC-type)
Accept the SD signals selected from the menu.

BKFV-200 boards (optional)

These boards are the same as the SD OUT board and the SD IN board originally provided with the system.

BKFV-110 boards (optional)



❶ LINK A 1, 2, 3 connectors (BNC-type)
Supply the HD LINK A signals selected from the menu.

❷ LINK B 1, 2, 3 connectors (BNC-type)
Supply the HD LINK B signals selected from the menu.

❸ MONITOR (SUPER) 1, 2, 3 connectors (BNC-type)
Supply anolog video signals for monitoring with a character signal superimposed. Connect to the input connectors of the video monitors.

❹ TC connector (BNC-type)
Supplies a timecode signal.

❺ SQ connector (BNC-type)
Supplies a sequential signal.

❻ LINK A connector (BNC-type)
Accepts the HD A signal selected from the menu.

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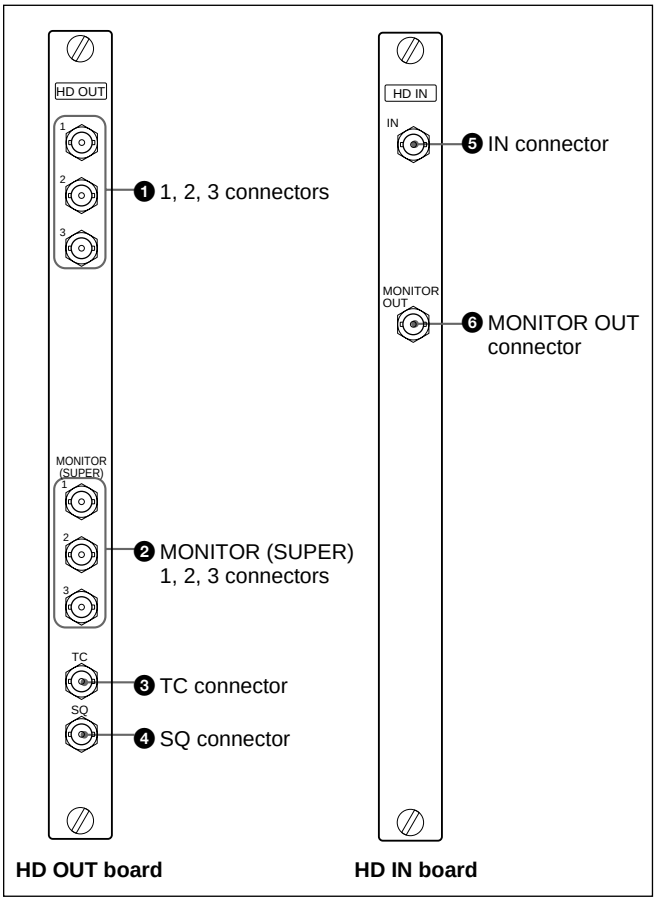
❼ MONI-OUT (monitor output) connector (BNC-type)
Supplies the signal input to the LINK A connector for monitoring.

❽ LINK B connector (BNC-type)
Accepts the HD B signal selected from the menu.

❾ MONI-OUT (monitor output) connector (BNC-type)
Supplies the signal input to the LINK B connector for monitoring.

BKFV-100 boards (optional)



❶ 1, 2, 3 connectors (BNC-type)
Supply HD signals.

❷ MONITOR (SUPER) 1, 2, 3 connectors (BNC-type)
Supply analog video signals for monitoring with a character signal superimposed. Connect to the input connectors of the video monitors.

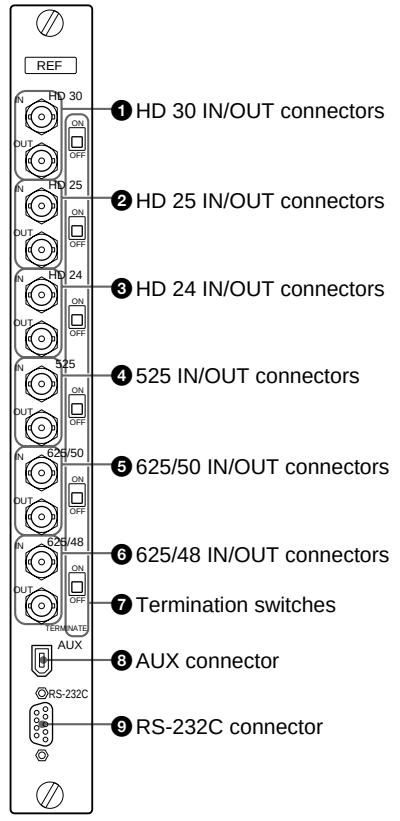
❸ TC connector (BNC-type)
Supplies a timecode signal.

❹ SQ connector (BNC-type)
Supplies a sequential signal.

❺ IN connector (BNC-type)
Accepts the HD signal.

❻ MONITOR OUT connector (BNC-type)
Supplies a signal input to the IN connector for monitoring.

REF board



REF board

❶ HD 30 IN/OUT connectors (BNC-type)
Input a reference signal for the HD 30 TV system to the IN connector. The OUT connector supplies the signal input to the IN connector when the termination switch is set to OFF, and the reference signal generated internally when the switch is set to ON.

❷ HD 25 IN/OUT connectors (BNC-type)
Input a reference signal for the HD 25 TV system to the IN connector. The OUT connector supplies the signal input to the IN connector when the termination switch is set to OFF, and the reference signal generated internally when the switch is set to ON.

❸ HD 24 IN/OUT connectors (BNC-type)
Input a reference signal for the HD 24 TV system to the IN connector. The OUT connector supplies the signal input to the IN connector when the termination switch is set to OFF, and the reference signal generated internally when the switch is set to ON.

❹ 525 IN/OUT connectors (BNC-type)
Input a reference signal for the 525 TV system to the IN connector. The OUT connector supplies the signal input to the IN connector when the termination switch is set to OFF, and the reference signal generated internally when the switch is set to ON.

❺ 625/50 IN/OUT connectors (BNC-type)
Input a reference signal for the 625/50 TV system to the IN connector. The OUT connector supplies the signal input to the IN connector when the termination switch is set to OFF, and the reference signal generated internally when the switch is set to ON.

❻ 625/48 IN/OUT connectors (BNC-type)
Input a reference signal for the 625/48 TV system to the IN connector. The OUT connector supplies the signal input to the IN connector when the termination switch is set to OFF, and the reference signal generated internally when the switch is set to ON.

❼ Termination switches
For setting termination of the IN connector corresponding to each switch.

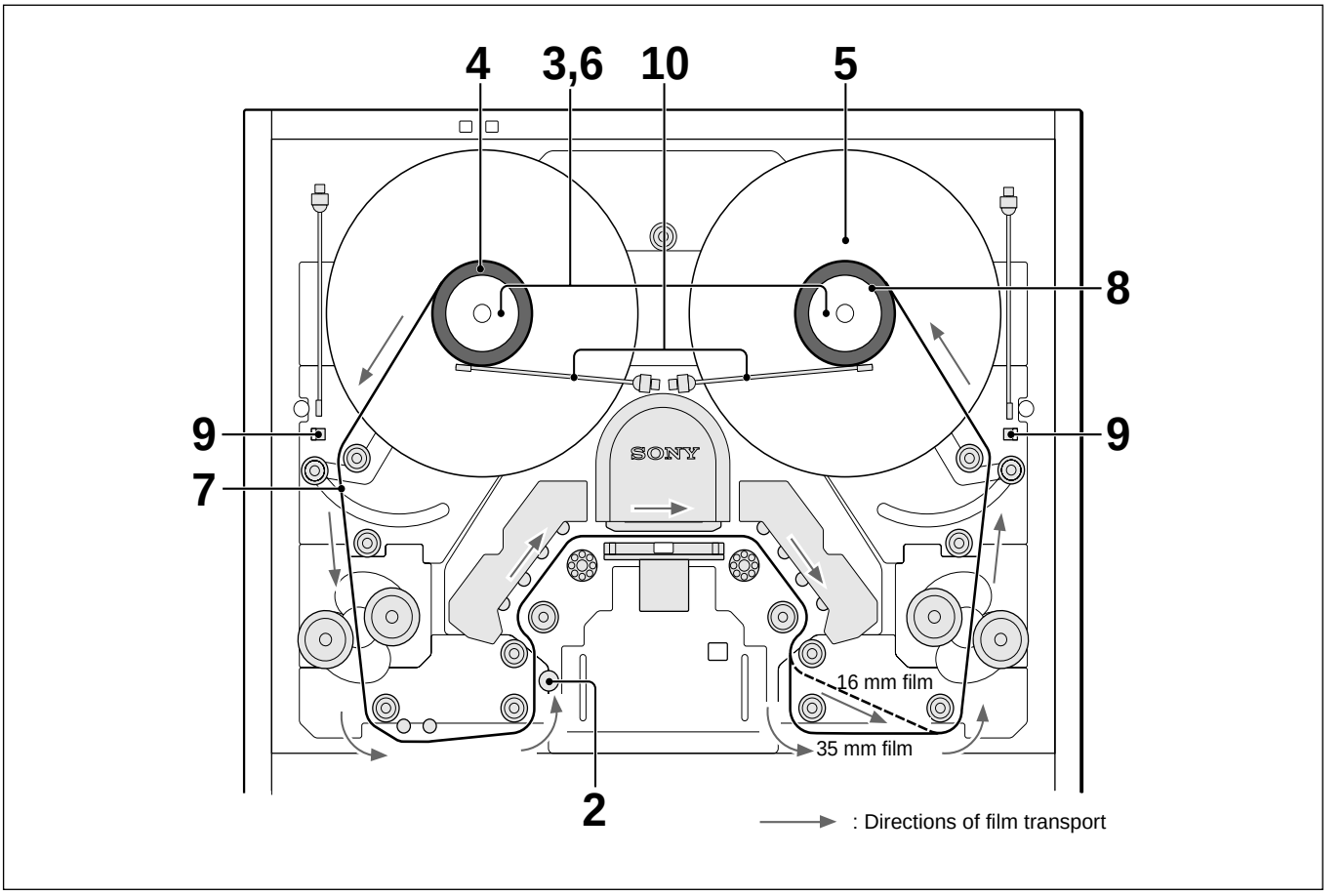
OFF: The signal input to the IN connector is not terminated. The corresponding OUT connector can supply the signal input to the IN connector.

ON: The signal input to the IN connector is terminated with 75 ohms. The OUT connectors supply the reference signal generated internally.

❽ AUX connector
For adjusting the boards.

❾ RS-232C connector (D-sub 9-pin)
For adjusting the boards.

Film Loading



Load the film following the instructions below.

1 Open the front doors of the film mount table.

2 Set the film bracket according to the film size, pulling up for 16-mm film or pushing down for 35-mm film.

3 Turn the center knobs clockwise until the black claws are pulled in.

4 Mount the film onto the supply reel table.

5 Mount the take-up reel onto the take-up reel table.

6 Fix the reels by turning the center knobs clockwise until the black claws pop out.

Note

If the clows do not pop out, turn the knob counterclockwise three times, and turn it clockwise until the claws pop out.

7 Route the film according to the arrows on the film mount table. Note that some parts of the path differ for 16-mm and 35-mm films.

8 Insert the end of the film into the groove of the take-up reel, and turn the reel several times to wind the film.

9 Set the film-path select switches on the supply and take-up reels according to the film path.

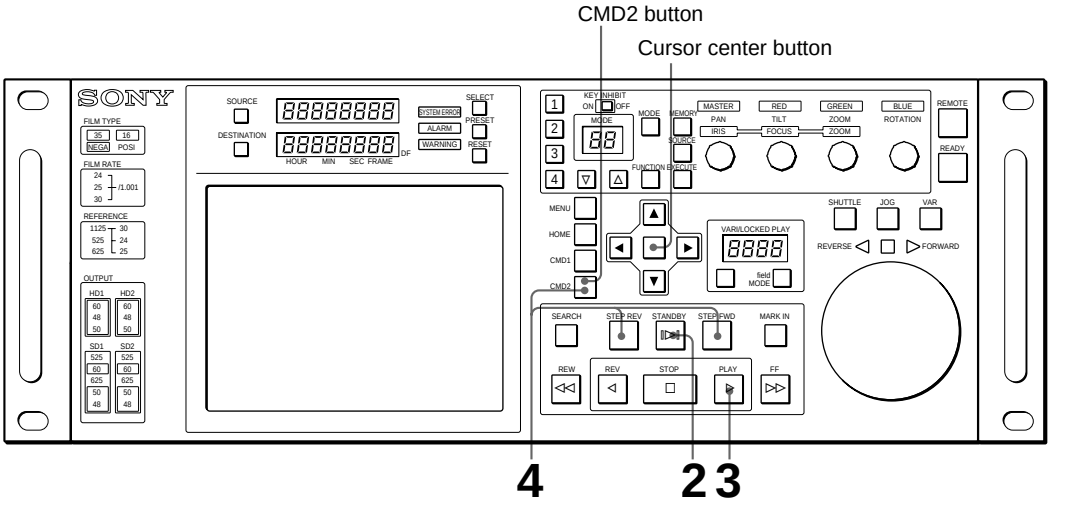
10 Secure the film by turning the fixing rods.

11 Close the front doors.

Note on the interlock switches

The interlock switches are provided on the film mount table and on the rear panel. When the front and rear doors are all closed, the switches are turned ON, and power is supplied to the film transport block. If you open one of the doors, the switch sets itself to OFF, and power cannot be supplied to the film transport block even if the power switch is set to ON. Once the interlock switch is turned OFF with a door open, wait at least 30 seconds before restoring the interlock switch.

Playback



1 Load the film.

For details, see "Film Loading."

2 Press the STANDBY button.

3 Press the PLAY button.

4 To adjust the position of the film, press the STEP REV or STEP FWD button while holding down the CMD2 button.

Manual air-blow

The machine send air to the film to blow off the dust from the film .
You can send air manually at any time by holding down the CMD2 and cursor center buttons simultaneously.

Playback in jog mode

In jog mode, you can control the speed of playback by turning the search dial.
To carry out playback in jog mode, use the following procedure.

1 Press the JOG button so that the JOG button lights.

Pressing the search dial toggles between jog mode, shuttle mode, and variable mode.

2 Turn the search dial in the desired direction at the speed corresponding to the desired playback speed.

Playback in jog mode starts.

3 To stop playback in jog mode, stop turning the search dial.

Playback in shuttle mode

In shuttle mode, you can control the speed of playback by the angular position of the search dial. The playback speed range is ±5 (for 35-mm film) or ±7 (for 16-mm film) times normal speed. There are click points on the search dial at the still position and at 80% of the maximum speed.
To carry out playback in shuttle mode, use the following procedure.

1 Press the SHUTTLE button so that the SHUTTLE button lights.

Pressing the search dial toggles between jog mode, shuttle mode, and variable mode.

2 Turn the search dial to the angle corresponding to the desired playback speed.

Playback in shuttle mode starts.

3 To stop playback in shuttle mode, return the search dial to the center position, or press the STOP button.

To return to normal-speed playback

Press the PLAY button.

To alternate between normal-speed playback and shuttle mode playback

Set the search dial to the position corresponding to the desired shuttle playback speed, then switch between normal-speed playback and shuttle playback by pressing the PLAY and SHUTTLE buttons alternately.

Playback in variable mode

In variable mode, you can finely control the speed of playback in the range of –2 to +2 times normal speed. There are click points on the search dial at the still position and at ±1 time normal speed.
To carry out playback in variable mode, use the following procedure.

1 Press the VAR button so that the VAR button lights.

Pressing the search dial toggles between jog mode, shuttle mode, and variable mode.

2 Turn the search dial to the angle corresponding to the desired playback speed.

Playback in variable mode starts.

3 To stop playback in variable mode, return the search dial to the center position, or press the STOP button.

To return to normal-speed playback

Press the PLAY button.

To alternate between normal-speed playback and variable mode playback

Set the search dial to the position corresponding to the desired variable playback speed, then switch between normal-speed playback and variable playback by pressing the PLAY and VAR buttons alternately.

Stopping the System Temporarily

Press the READY button in STOP mode, and the film tension is released.
The tension is retrieved when the READY button is pressed again, and playback starts again from precisely the point.

This function is available after 2000.

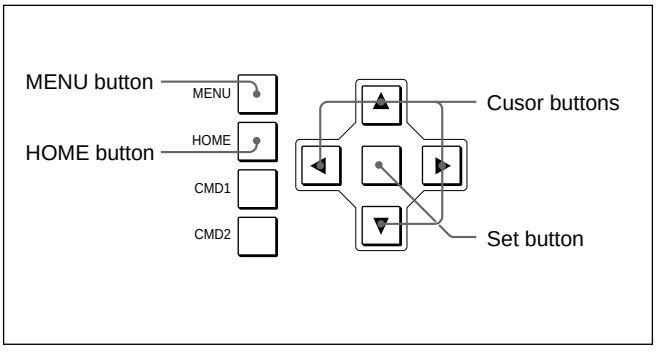
Controlling the Unit With an External Device

Press the REMOTE button so that the button lights. Then you can control the unit using an external device connected to the REMOTE connector on the rear.

For details, refer to the MAINTENANCE MANUAL.

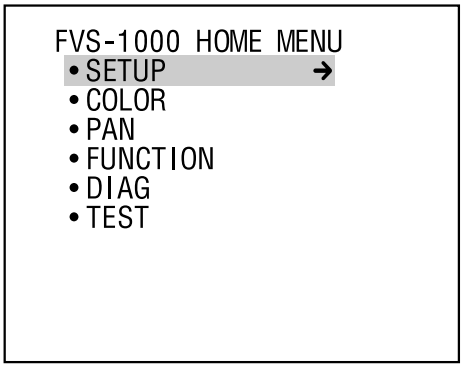
Menu Operations

Basic Operations



1 Press the MENU button.

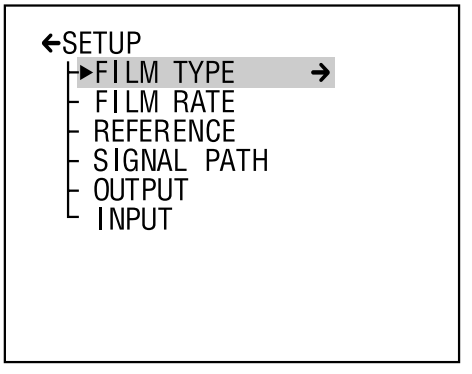
The FVS-1000 HOME MENU appears.



2 Press the cursor ▲ or ▼ button to select the item.

3 Press the cursor ▶ button.

The menu for the selected item appears.



←: This means that pressing the cursor ◀ button takes you to the previous page.
→: This means that pressing the cursor ▶ button takes you to the following page or item.

▶: This is the cursor that indicates the selected item.
Item displayed on a white background: This indicates the currently selected item.

4 Press the cursor ▲ or ▼ button to select the item, then press the cursor ▶ button.

The submenu or a list of selectable items appears.

Repeat step **4** until a list of selectable items appears.

5 **To select an item:**
Press the cursor ▲ or ▼ button to move the cursor, or the cursor ◀ or ▶ button to select an item, and press the Set (cursor center) button.
To adjust the level:
Turn the control knob corresponding to the item to be adjusted.

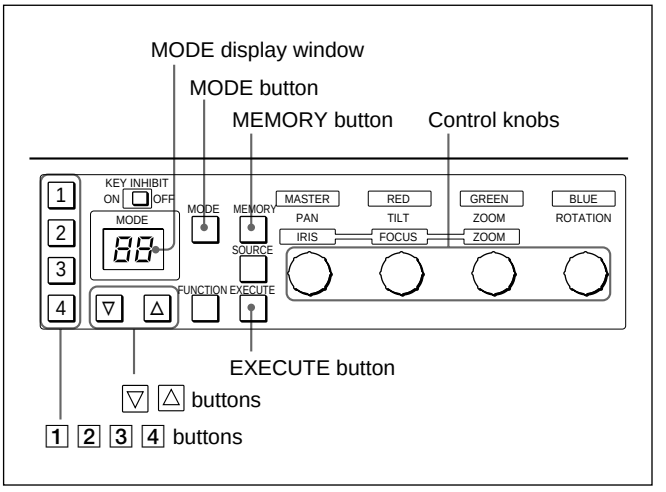
Repeat steps **2** to **5** as required.

To return to the HOME MENU

If you press the HOME button with any menu displayed, the HOME MENU page appears.

Mode Operations

Some menu items can be set or controlled in the mode block on the control panel. Mode numbers corresponding to menu items are shown in the tables in "Menu Items."
The mode number is shown in the MODE display window, and the settings for the selected mode number are shown in the mode display block in the menu display window.



Selecting a mode number

To select a lower digit
Press the △ button to increment the digit, or the ▽ button to decrement the digit.

To select an upper digit
Press the FUNCTION and △ buttons simultaneously to increment the digit, or the FUNCTION and ▽ buttons simultaneously to decrement the digit.

Setting data

Required operations depend on the mode number.
For details on operations requied for each mode are listed in the tables in "Menu Items."

To set the data (Operation ①)

1 Select the mode number.

2 Press the MODE button to select the setting.

3 Press the EXECUTE button.

To control the level (Operation ②)

1 Select the mode number.

2 Select a video output channel if necessary.

3 Turn the control knobs.

To select a video output channel (Operation ③)
Press the 1, 2, 3, or 4 button.

To execute function (Operation ④)
Press the EXECUTE button.

To select the input source A (Operation ⑤)
Press the SOURCE button.

To select the input source B (Operation ⑥)
Press the FUNCTION and SOURCE buttons simultaneously.

To swap the input A to input B (Operation ⑦)
Press the CMD2 and SOURCE buttons simultaneously.

To select the subitem shown by a decimal point to the right of the digit (Operation ⑧)
Press the MODE button. Each time you press the MODE button, the mode number changes like 1 1, 1 1., 1.1, and 1.1..

To retrieve an initial value (undo) (Operation ⑨)
Press the CMD2 and FUNCTION buttons simultaneously.

To retrieve a default value (Operation ⑩)
Press the CMD1 and FUNCTION buttons simultaneously.

Checking an Input Signal

To check an input signal, press the FUNCTION and SOURCE buttons simultaneously. While pressing these buttons, an external signal can be checked as an input signal.
While checking an external signal, press the SOURCE button, and the signal stored in memory can be checked.

Loading and Storing Data

To load or store the data in memory

1 Press the MEMORY button.

2 Press the [1], [2], [3], or [4] button to select a video output channel.

3 Press the [△] or [▽] button to select the memory bank (0 to 3 for HD, and 0 to F for SD).

The image stored in the selected bank is loaded.

To select a source

Press the SOURCE button to select the source of the image to be stored.

To store the data

Press the EXECUTE button to store the image in the selected bank.

To check the signal stored in memory

Press the FUNCTION button. While pressing the button, the signal stored in memory can be checked as an input signal.

To terminate a load- and store-operation

Press the MEMORY button.

Menu Items

HOME menu

Item	Contents
SETUP	For setting the FVS-1000 system
COLOR	For adjusting the color
PAN	For adjusting the angle of the camera
FUNCTION	For activating various functions
DIAG	For checking the system status
TEST	For testing the system

SETUP menu

Item	Setting(s)	Mode No.	Operation No.
FILM TYPE			
Size	Select the film size. 35mm: 35 mm film 16mm: 16 mm film	F0	①
Perf (film perforation size)	Select the film perforation size from among 4P, 3P, 8P, and SLIDE.		
CoreS (core size of the supply side) **CoreT** (core size of the take-up side)	Select the core size of the supply and take-up sides. 2": for 2-inch core 3": for 3-inch core 5": for 5-inch core		
Char (characteristics)	Select the film color characteristics. NEGA: Negative film PT: PrimeTime I-NEGA: Inter negative IP: Inter positive PRINT: Print	F1	
FILM RATE	Select the film rate from among 24, 25, and 30. For each film rate, select 1.000 or 1/1.001.	F2	①
REFERENCE			
Ref (reference)	Select a reference signal from among INTERNAL, 1125, 30 (EXT), 1125 24 (EXT), 1125 25 (EXT), 525 (EXT), 625 50 (EXT) or 625 48 (EXT)	F3	①
SIGNAL PATH			
HD2	Select a signal path to an HD2 board. NORMAL: Normal path HD1 MONITOR: The output signal of the HD1 board is input to the HD2 for monitoring.		
SD1, **SD2**	Select a signal path to an SD1 or SD2 board. NORMAL: Normal path HDIE ON: The signal passed the HD image enhancer circuit is input to the SD1 or SD2 board. HD1 MONITOR: The output signal of the HD1 board is input to the SD1 or SD2 for monitoring. HD2 MONITOR: The output signal of the HD2 board is input to the SD1 or SD2 for monitoring.		

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Item		Setting(s)	Mode No.	Operation No.
OUTPUT				
HD1, **HD2**	**OUTPUT FORMAT**	Select the output signal format for an HD1 or HD2 from among 60, 48, and 50.	F4	①
	OUTPUT SELECT	Select an output signal type for an HD1 or HD2 from among 4:2:2, 4:2:2:4, 4:4:4:4 (Y/C), and 4:4:4:4 (RGB). **Note** This page appears only when the BKFV-110 is installed.		
SD1, **SD2**	**OUTPUT FORMAT**	Select the output signal format for an SD1 or SD2 from among 525 60, 625 50, and 625 48.	F6	①
	OUTPUT SELECT	Select an output signal type for an SD1 or SD2 from among 4:2:2, 4:2:2:4, 4:4:4:4 (Y/C), 4:4:4:4 (RGB), 8:4:4H, 8:4:4V, 8:8:8 (Y/C) a), and 8:8:8 (RGB) a).		
INPUT				
HD1, **HD2**	**INPUT SELECT**	Select an input signal type for and HD1 or HD2 from among 4:2:2, 4:2:2:4, 4:4:4:4 (Y/C), and 4:4:4:4 (RGB). **Note** This page appears only wheb the BKFV-110 is installed.		
SD1, **SD2**	**INPUT SELECT**	Select an input signal type for an SD1 or SD2 from among 4:2:2, 4:2:2:4, 4:4:4:4 (Y/C), 4:4:4:4 (RGB), 8:4:4H, 8:4:4V, 8:8:8 (Y/C) a), and 8:8:8 (RGB) a).	F7	①

a) Function availabe after 2000

COLOR menu

Item		Setting(s)	Mode No.	Operation No.
B/W	**LAMP**	Adjust the optical color of the lamp using the control knobs. M (MASTER): Adjust the luminance level R (RED): Adjust the red level. G (GREEN): Adjust the green level. B (BLUE): Adjust the blue level.	02	② ⑨ ⑩
	IM BLACK (imager black)	Adjust the master black level using the control knobs. M (MASTER): Adjust the luminance black level. R (RED): Adjust the black level of red. G (GREEN): Adjust the black level of green. B (BLUE): Adjust the black level of blue.	10	② ⑨ ⑩
	IRIS	Adjust the iris using the control knob.	18	② ⑨ ⑩
	IM GAIN (imager gain)	Adjust the camera gain using the control knobs. M (MASTER): Adjust the luminance gain level. R (RED): Adjust the gain of red. G (GREEN): Adjust the gain of green. B (BLUE): Adjust the gain of blue.	14	② ⑨ ⑩
LENS				
	IRIS	Adjust the iris.	18	② ⑨ ⑩
	FOCUS	Adjust the focus.		
	ZOOM	Adjust the zoom		
	FILTER **ND** (Neutral Density filter)	Select an ND filter using the left most control knob. 0: Clear 1: 1/4 2: 1/16 3: 1/64	19	② ⑨
	CC (Color Conversion filter)	Select the CC filter using the second control knob from the left. 0: Cross filter 1: 3200K 2: 4300K 3: 6300K		

(Continued)

Item	Setting(s)	Mode No.	Operation No.
GAMMA			
VIDEO GAMMA	Adjust the gamma of the linear domain. R (RED): Adjust the video gamma of red. G (GREEN):Adjust the video gamma of green. B (BLUE): Adjust the video gamma of blue.	26	② ⑨ ⑩
FILM GAMMA BANK	Adjust the gamma of the logarithmic domain. R (RED): Select a film gamma table of red from 16 banks. G (GREEN): Select a film gamma table of green from 16 banks. B (BLUE): Select a film gamma table of blue from 16 banks.	22	② ⑨
CRT GAMMA	Set the CRT gamma to ON or OFF. ON: SMPTE-275M (When set to ON, the EXECUTE button is lit.) OFF: Through	31	④ ⑨
IMAGE ENHANCER			
LEVEL DEPENDENT	Adjust the level dependent. Select an output from among HD, SD1, and SD2. SLOPE: Adjust the slope using the control knobs. POINT: Adjust the point using the control knobs.	42 42.	② ③ ⑧ ⑨ ⑩
H PEAK FREQ	Adjust the H peak frequency. Select an output from among HD, SD1, and SD2. POINT: Adjust the point using the three control knobs from the left.	43	② ③ ⑨ ⑩
V PEAK FREQ	Adjust the V peak frequency. Select an output from among HD, SD1, and SD2. POINT: Adjust the point using the two control knobs from the left.	44	② ③ ⑨ ⑩
DETAIL GAIN	Adjust the detail gain. Select an output from among HD, SD1, and SD2. M (MASTER): Adjust the detail gain of master R (RED) [a)]: Adjust the detail gain of red G (GREEN) [a)]: Adjust the detail gain of green B (BLUE) [a)]: Adjust the detail gain of blue	46	② ③ ⑨ ⑩
CRISPENING	Ajust the crispening. Select an output from among HD, SD1, and SD2. SLOPE: Adjust the slope for P1 to P6. POINT: Adjust the point for P1 to P6.	47 47.	② ③ ⑧ ⑨ ⑩
LUMI/SAT			
LUMINANCE	Adjust the luminance using the leftmost control knob.	32	② ⑨ ⑩
SATURATION	Adjust the saturation using the second control knob from the left.		
KNEE/SLOPE			
KNEE POINT	Adjust the knee point.	23	② ⑨ ⑩
KNEE SLOPE	Adjust the knee slope.		
FLARE	Adjust the flare. R (RED): Adjust the flare of red G (GREEN): Adjust the flare of green B (BLUE): Adjust the flare of blue	15	② ⑨

a) Function availabe after 2000

Item		Setting(s)	Mode No.	Operation No.
SHADING				
WHITE **BLACK**		Adjust the shading. Select BLACK (Mode No. 12) or WHITE (Mode No. 11) by pressing the cursor ◀ or ▶ button.		② ⑧ ⑨ ⑩
VSAW		R (RED): Adjust the VSAW of red G (GREEN): Adjust the VSAW of green B (BLUE): Adjust the VSAW of blue	11 12	
VPARA		R (RED): Adjust the VPARA of red G (GREEN): Adjust the VPARA of green B (BLUE): Adjust the VPARA of blue	11. 12.	
HSAW		R (RED): Adjust the HSAW of red G (GREEN): Adjust the HSAW of green B (BLUE): Adjust the HSAW of blue	1.1 1.2	
HPARA		R (RED): Adjust the HPARA of red G (GREEN): Adjust the HPARA of green B (BLUE): Adjust the HPARA of blue	1.1. 1.2.	
TEST SIGANL				

PAN menu

Item		Setting(s)	Mode No.	Operation No.
IMAGER POS				
PAN		Adjust panning.	08	② ⑨ ⑩
TILT		Adjust tilting.		
ZOOM		Adjust zooming.		
ANGLE		Adjust the camera angle.		
LENS	**ZOOM**	Adjust zooming.	18	② ⑨ ⑩
	FOCUS	Adjust focusing.		
E-ZOOM		Adjust the E-Zoom. (source control or target control) Select an output from among HD, SD1, and SD2. Adjust panning using the leftmost control knob. Adjust tilting using the second control knob from the left.	60 61	② ③ ⑨ ⑩
		Adjust X-ZOOM using the second control knob from the right. Adjust Y-ZOOM using the rightmost control knob.	60	
		Adjust Master-ZOOM using the second control knob from the right.	61	
		Select an image framing among from Sqeeze, CROP, or Letter Box.	F5	①
BLANKING		Adjust the blanking. Select an output from among HD, SD1, and SD2. VU: Adjust the V-upper blanking using the second control knob from the left. VL:Adjust the V-lower blanking using the rightmost control knob. HL: Adjust the H-left blanking using the leftmost control knob. HR: Adjust the H-right blanking using the second control knob from the right.	62	② ③ ⑨ ⑩
ROTATION		Adjust the rotation of the picture. ON: Picture rotated by 180 degrees OFF: Normal picture	63	④

FUNCTION menu

Item			Setting(s)	Mode No.	Operation No.
WIPE			Select a wiping pattern. Select an output from among HD1, HD2, SD1, and SD2.	50	② ③ ④ ⑤ ⑥ ⑦ ⑨
	H WIPE		Select wiping direction. OFF: No wipe H WIPE: Horizontal wipe VWIPE: Vertical wipe		
	SRC A, **SRC B**		Select a source picture A/B MAIN: The main picture EXT: A picture from external equipment MEM: A picture stored in a memory bank		
	BORDER		Adjust the border of horizontal wiping using the leftmost control knob. Adjust the border of vertical wiping using the second control knob from the left.		
MIX			Select an output from among HD1, HD2, SD1, and SD2.	51	② ③ ④ ⑤ ⑥ ⑦ ⑨
	EXT KEY		Set the external key to OFF or EXT.		
	SRC A, **SRC B**		Select a backgroud picture (SRC A) and a foreground picture (SRC B). MAIN: The main picture EXT: A picture from external equipment MEM: A picture stored in a memory bank		
INPUT CHECK			Check an input signal. *For details on cheking an input signal, see "Checking an Input Signal."*		
			Select an output from among HD1, HD2, SD1, and SD2, and select an input signal. OFF: Normal EXT INPUT: For checking an external input signal MEM: For checking a signal stored in memory		
FRAME STORE			Load and store the data in frame memory. Select an output from among HD1, HD2, SD1, and SD2. *For details on loading and storing data, see "Loading and Storing Data."*		
	LOAD		Select a memory bank from 0 to F from which the data are to be loaded.		
	STORE	**SRC**	Select the source of data to be stored in a memory bank. MAIN: Tha main picture EXT INPUT: A picture from external equipment		
		BANK	Select a memory bank from 0 to F to store the data.		

DIAG menu

Item	Contents
OPERATION TIME	The operation time of the following items is shown: OPERATION TIME SYSTEM 000 HOURS FILM TRAVEL 35mm 000 REELS 16mm 000 REELS THREADING 0000 TIMES OPS 000 HOURS AIR BLOW 0 HOURS LAMP OPERATION TIME POWER 000 HOURS ON/OFF 0000 TIMES FLC R 000 HOURS FLC G 000 HOURS FLC B 000 HOURS FLC M 000 HOURS
SOFTWARE VERSION	The software version of the installed boards is shown.

TEST menu

Item			Contents
SYSTEM			
	USER	**FACTORY**	Load the factory setting data.
		USER0	Load and save the user setting data.
		USER1	Load and save the user setting data.
SERVO			
	PTR		Set the PT roller settings. AUTO: The PT rollers touch the film during playback. ALL: The PT rollers always touch the film. OFF: The PT rollers do not touch the film.
	AIR BLOW		ON: Air is output while film is running. OFF: Air is not output.
OPS	**V**, **H**		ON: Controlling the OPS vertically (V) or horizontally (H). OFF: OPS does not work.

OPS: Optical Positioning Stabilizer
FLC: Felo-electric Liquid Crystal Shutter
1 REEL = 2000 feet of film running

Specifications

General

Dimensions (w/h/d)	1175 × 1798 × 780 mm (46 3/8 × 71 1/4 × 30 3/4 inches)
Mass	Approx. 650 kg (1433 lb)
Power requirements	for the Unites States and Canada: AC 120 V, 50/60 Hz for the other countries: AC 220 to 240 V, 50/60 Hz
Power consumption	for the Unites States and Canada: 30 A, 15 A for outlet for the other countries: 17 A, 8 A for outlet

Film transport system

Film format	35 mm and Super 35 mm 4&3 perforation
Optional:	35 mm anamorphic
Optional:	16 mm, Super 16 mm
Film type	Negatives, Prints, Inter positives
Film gate	3&4 perf. 35 mm film gate
Optional:	16 mm film gate
Film capacity	Max. 2500 ft.
Film core type	2 inch, 3 inch and 5 inch for 35 mm 2 inch, 3 inch and 5 inch for 16 mm
Film drive	Sprocket driven by AC servo motors [1)] Supply and take-up reel driven by AC servo motors
Film drive lock-up time	2 film frame from stand-by On (Still) to Play
Film frame rate	23.976, 24, 24.975, 25, 29.97, 30 Fps forward and reverse mode
Step mode	Single step forward and reverse mode
Stop mode	True Still frame mode
Shuttle mode	Max. 5 times normal playback speed at 35 mm Film Max. 7 times normal playback speed at 16 mm Film
Variable mode	±2 times normal playback speed
35 mm film maximum perforation vertical repositioning capability range [2)]	±50 µm at film plane
35 mm film vertical framing	Adjustment of vertical framing by single perforation step in forward and reverse mode

Film image acquisition system

Image acquisition device	3-chip 2 million pixels Hyper HAD FIT area CCD (3@1920 × 1080 frame array)
Light source	Xenon lamp 300 W
Diffuser	Integrating sphere
Lens	35 mm zoom lens
Optional:	35 mm anamorphic conversion lens
Optional:	16 mm prime lens
Lens control	Remote motorised servo control for Iris, Focus and Zoom (if available)
ND filter	Clear, 1/4 ND, 1/16 ND, 1/64 ND
CC filter	Cross, 3200K, 4300K, 6300K
CCD block movement	
Horizontal:	24 mm at 35 mm film plane
Horizontal:	12 mm at 35 mm film plane
Vertical:	28 mm at 35 mm film plane
Vertical:	14 mm at 35 mm film plane
Rotation:	210 degree
Electronic 180 deg rotation	only when HD Zoom off

Primary color correction system

Optical gain control	R, G and B independent intensity control
Electrical gain control	R, G, B and Master
Pedestal range	R, G, B and Master
White/black shading	Para and Saw independent horizontal, vertical and R, G, B
Gamma control	Negative, Print and Inter positive pre-setting with coarse and fine control
Saturation control	-∝ to +3 dB
Luminance control	-∝ to +3 dB
Sampling rate and quantization	3 @ 12 bit logarithmic R/G/B independent @ 74 MHz

1) The two inner sprocket provide intermittent motion during playback, and provides continuous motion during shuttle. The two outer sprockets permanently provide continuous motion.

2) 16 perforation averaging system. When these 16 perforation pitch errors include ±50 µm on the film, OPS corrects ±10 µm film image.

HDTV functions (with optional BKFV-100 installed)

System	1080/60I 1080/59.94I 1080/50I 1080/24PsF 1080/23.976PsF
Electrical zoom	Area magnification: 0.5× to 4× by Zoom or independent X and Y sizing with pan and tilt affecting SD (625/525) picture
Blanking control	Independent X and Y adjusting
Image enhancer	Horizontal and vertical aparture correction with crispening, level depend, horizontal and vertical peak frequency, and detail gain control
Frame store	for reference frame 4 frame @ HD 4:4:4
Wipe	Horizontal and vertical wipe Source selection: main, input, frame store
Signal to noise ratio	for luminance better than 58 dB [3)]
Video input	HD SDI (4:2:2)
Video output	HD SDI (4:2:2)
Sequence output	Pulldown sequence pulse

SDTV Functions

The FVS-1000 system is furnished with one channel of SDI processing board. A second channel can be configured by adding the BKFV-200 SDTV processing board.

System	525/625 switchable
Electrical zoom	Area magnification: 0.25× to 4× by Zoom or independent X and Y sizing with pan and tilt including Crop, Squeeze and Letter box
Blanking control	Independent X and Y adjusting
Image enhancer	Horizontal and vertical aparture correction with crispening, level depend, horizontal and vertical Master and detail gain control
Frame store	for reference frame 16 frame @ SD 8:8:8
Wipe	Horizontal and vertical wipe Source selection: main, input, frame store
Signal to noise ratio	for luminance better than 62 dB [4)]
Video input	D-1 SDI (4:2:2) - max. 3 channels or dual D-1 SDI (4:2:2:4 or 4:4:4:4 or 8:4:4)
Video output	D-1 SDI (4:2:2) or dual D-1 SDI (4:4:4, 8:4:4) Monitor out (analog composite)
Sequence output	Pulldown sequence pulse

Reference Input/Output (Analog)

HD Input/Output	Trilevel sync field rate: 60/59.94 50/49.95 48/47.952
SD Input/Output	Black burst (NTSC/PAL) 525 sync 625 sync

Remote interface

RS-422	Telecine controller I/F D-sub 9-pin

Designs and specifications are subject to change without notice.

3) Measured at 50% video level, gamma = 0.4.
The ratio being 700 mV divided by r.m.s noise voltage
At the below conditions:

Film type:	IP
Imager gain:	M:0, R, G, and B; A000
Iris:	0000
Film Gamma:	5
Detail gain:	0000
Back level:	Setting all 0000 and after adjust 350 mV by Master level

4) Measured at 50% video level, gamma = 0.4.
The ratio being 700 mV divided by r.m.s noise voltage
At the below conditions:

Film type:	IP
Imager gain:	M:0, R, G, and B; A000
Iris:	0000
Film Gamma:	5
Detail gain:	0000
Back level:	Setting all 0000 and after adjust 350 mV by Master level

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